

AIR QUALITY PERMIT

Issued to: ConocoPhillips Company
Billings Refinery
P.O. Box 30198
Billings, MT 59107-0198

Permit #2619-17
Administrative Amendment (AA) Request Received: 12/10/02
Department Decision on AA: 04/15/03
Permit Final: 05/01/03
AFS#: 111-0011

An air quality permit, with conditions, is hereby granted to ConocoPhillips Company, Billings Refinery (ConocoPhillips), pursuant to Sections 75-2-204 and 211 of the Montana Code Annotated (MCA), as amended, and the Administrative Rules of Montana (ARM) 17.8.740, *et seq.*, as amended, for the following:

SECTION I: Permitted Facilities

A petroleum refinery and all refinery equipment, including, but not limited to, the following:

A. Existing Sources – ConocoPhillips

<u>Emission Point</u>	<u>Source</u>
1	Four (4) Boilers
2	Heater #1 ¹
3	Heater #2
4	Heater #4
5	Heater #5
6	Coker Heater
7	Heater #10
8	Heater #11
9	Heater #12
10	Heater #13
11	Heater #14
12	Heater #15
13	Heater #16
14	Heater #17
15	Heater #18
16	Heater #19
17	Heater #20
18	Heater #21
19	Heater #22
20	Heater #23
21	Heater #24
22	Fluid Catalytic Cracking Unit
23	Flare (refinery)
24	Storage Tanks
25	Bulk Loading - Gasoline and Distillate
26	Fugitive VOC Emissions
27	CPI Separator System
28	Recycle Hydrogen Heater
29	Fractionator Feed Heater
30	20.0 MMscfd Hydrogen Plant SMR Heater

¹ The 22 Refinery Fuel Gas Heaters/Furnaces referred to in this permit include: H-1, H-2, H-4, H-5, H-10, H-11, H-12, H-13, H-14, H-15, H-16, H-17, H-18, H-19, H-20, H-21, H-22, H-23, and H-24, Coker heater (H-3901), Recycle Hydrogen heater (H-8401), and Fractionator Feed heater (H-8402).

31	Polymer Modified Asphalt Process Heater (H-3201)
32	Saturate Gas Plant

B. Existing Sources - Jupiter Sulphur, Inc. (Jupiter), operated by Kerley Enterprises.

<u>Emission Point</u>	<u>Source</u>
1	Main Stack (S-101/S-401)
2	Jupiter Flare Stack

The Jupiter Recovery Facility consists of three primary units: the existing Ammonium Thiosulfate (ATS) Plant, the existing Ammonium Sulfide Unit (ASD), and the Claus Sulfur and Tail Gas Treating Units (TGTU). The addition of the units increased the total sulfur recovery capacity of the facility from 110 Long Tons per Day (LT/D) to 170 LT/D of sulfur. Jupiter's new Claus Sulfur and TGTUs shall have three parallel single-stage high-efficiency gas filters for final particulate and sulfur dioxide (SO₂) control. All emissions from these three primary processes are vented to Jupiter's main stack.

C. Current Permit Action

A letter from ConocoPhillips dated December 9, 2002, and received by the Montana Department of Environmental Quality (Department), on December 10, 2002, notified the Department that Conoco Inc. had changed its name to ConocoPhillips. In a letter dated February 3, 2003, ConocoPhillips also requested the removal of the conditions regarding the temporary power generators because the permit terms for the temporary generators were "not to exceed 2 years" and the generators have been removed from the facility. The current permit action changes the name on this permit from Conoco Inc. to ConocoPhillips and removes permit terms regarding temporary generators. Permit #2619-17 has also been updated to reflect current permit language and rule references used by the Department.

SECTION II: Conditions and Limitations

A. Emission Control Requirements

ConocoPhillips shall install, operate and maintain the following emission control equipment to provide the maximum air pollution control for which it was designed (ARM 17.8.752).

1. The Emergency flare must be equipped and operated with a steam injection system. The flare tip is to be based at 148-feet elevation.
2. The Jupiter flare must be equipped and operated with a steam injection system. The flare tip is to be based at 213-feet elevation.
3. Storage tank #49 shall be equipped with an internal floating roof with a double rim seal system for VOC loss control (ARM 17.8.752).
4. Storage tanks #4510 and #4511 shall be equipped with internal floating roofs with double rim seals or a liquid-mounted seal system for VOC loss control (ARM 17.8.752).
5. Storage tank #162 shall be equipped with a fixed roof that includes a roof-top vacuum breaker vent (ARM 17.8.340).

6. The C-23 compressor station shall be operated and maintained as follows (ARM 17.8.752):
 - a. All valves used are high-quality valves containing high-quality packing.
 - b. All open-ended valves are of the same quality as the valves described above. They will have plugs, caps, or a second valve installed on the open end.
 - c. All pipe and tower flanges are installed using process compatible gasket material.
 - d. All pumps are fitted with the highest quality state-of-the-art mechanical seals, as appropriate.
 - e. A VOC monitoring and maintenance program is instituted as described in 40 Code of Federal Regulations (CFR) 60.482-2, 40 CFR 60.482-4 thru 10, 40 CFR 60.483-1 and 2, 40 CFR 60.485, 40 CFR 60.486 (b-k), and 40 CFR 60.486 (c-e).
 - f. If monitoring or scheduled inspections indicate failure or leakage of the compressor seal system, then the seals shall be repaired as soon as practicable (but not later than 15 calendar days after it is detected), except as provided in 40 CFR 60.482-9.
7. ConocoPhillips shall comply with all applicable requirements of ARM 17.8.340, which reference 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS):
 - a. Subpart A - General Provisions applies to all equipment or facilities subject to an NSPS Subpart as listed below.
 - b. Subpart J - Standards of Performance for Petroleum Refineries shall apply to all of the heaters and boilers (with the exception of H-16, the heater that combusts the P-B Merox vent line, until June 30, 2003, when it will become subject) at the ConocoPhillips refinery and the Claus units at the Jupiter sulfur recovery facility and any other applicable equipment.

Compliance with the limits of this standard shall be determined by the H₂S Continuous Emission Monitor System (CEMS) on the fuel gas system that supplies the heaters and boilers (ConocoPhillips Consent Decree, paragraph 69).
 - c. Subpart Ka - Standards of Performance for Volatile Organic Liquid Storage Vessels shall apply to all volatile organic storage vessels (including petroleum liquid storage vessels) for which construction, reconstruction or modification commenced after May 18, 1978, and prior to July 23, 1984. These requirements shall be as specified in 40 CFR 60.110a through 60.115a. The affected tanks include, but are not limited to, the following:

Tank Number

#100-Ka*

#101-Ka*

#102-Ka

#104-Ka*

- * Currently exempt from all emission control provisions due to vapor pressure of materials stored.

- d. Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels shall apply to all volatile organic storage vessels (including petroleum liquid storage vessels) for which construction, reconstruction or modification commenced after July 23, 1984. These requirements shall be as specified in 40 CFR 60.110b through 60.117b. The affected tanks include, but are not limited to, the following:

Tank Number

#36-Kb

#72-Kb

#107-Kb*

#110-Kb*

#162-Kb*

#T-3201*

#T-4524

(ARM 17.8.752)

- * Currently exempt from all emission control provisions due to vapor pressure of materials stored.

- e. Subpart UU - Standards of Performance for Asphalt Processing and Asphalt Roofing Manufacture shall apply to, but not be limited to, asphalt storage tank T-3201 and any other applicable storage tanks that commenced construction or modification after May 26, 1981. Asphalt storage tank T-3201 shall comply with the standards in 40 CFR 60.472(c).
- f. Subpart GGG - Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries shall apply to, but not be limited to, the delayed coker unit, cryogenic unit, hydrogen membrane unit, gasoline mercox unit, crude vacuum unit, gas oil hydrotreater unit (consisting of a reaction section, fractionation section, and an amine treating section), 20.0-MMscfd hydrogen plant feed system, Alkylation Unit Butane Defluorinator Project (consisting of heat exchangers; X-453, X-223, X-450, X-451, X-452, pumps; P-646, Vessels; D-130, D-359, D-360), Polymer Modified Asphalt (PMA) process unit, Alkylation Unit Depropanizer Project; and any other applicable equipment constructed or modified after January 4, 1983.
- i. All valves used shall be high-quality valves containing high-quality packing.
- ii. All open-ended valves shall be of the same quality as the valves described above. They will have plugs, caps or a second valve installed on the open end.

- iii. All pipe and tower flanges shall be installed using process compatible gasket material.
 - iv. All pumps shall be fitted with the highest quality state-of-the-art mechanical seals, as appropriate.
 - v. A monitoring and maintenance program as described under New Source Performance Standards (40 CFR Part 60, Subpart VV) shall be instituted.
 - vi. The affected equipment within the PMA process unit shall be visually monitored for equipment leaks as outlined in 40 CFR 60.482-8.
- g. Subpart QQQ - Standards of Performance for VOC Emissions from Petroleum Refining Wastewater Systems, shall apply to, but not be limited to, the coker unit drain system, desalter wastewater break tanks, CPI separators, gas oil hydrotreater, 20.0-MMscfd hydrogen plant, C-23 compressor station, Alkylation Unit Butane Defluorinator Project, Alkylation Unit Depropanizer Project, and any other applicable equipment.
 - i. All process drains shall consist of tightly sealed caps or P-leg traps for sewer drains with intermittent flow.
 - ii. The secondary oil/water separator is an oil/water (CPI) separator with hydrocarbon collection and recovery equipment.
 - iii. All equipment is operated and maintained as required under 40 CFR Part 60, Subpart QQQ, New Source Performance Standards.
- 8. ConocoPhillips shall comply with all applicable requirements of ARM 17.8.341, which references 40 CFR Part 61, National Emission Standards for Hazardous Air Pollutants:
 - a. Subpart A - General Provisions applies to all equipment or facilities subject to a National Emission Standards for Hazardous Air Pollutants (NESHAP) subpart as listed below.
 - b. Subpart FF - National Emission Standards for Benzene Waste Operations shall apply to, but not be limited to, all new or recommissioned wastewater sewer drains associated with the Alkylation Unit Depropanizer Project, the refinery's existing sewer system, and Tanks 34 and 35.
- 9. As per a letter received by the Department on December 22, 1992, ownership of the Kerley Enterprises facility was transferred to Jupiter as of December 31, 1992.
 ConocoPhillips assumed responsibility for any and all air pollutant emissions from any sources covered by the most current state air quality permit, including those owned and constructed by Kerley Enterprises, Inc. ConocoPhillips is responsible for full compliance with all the following permit conditions, including those associated with the operation of the Jupiter sulfur recovery

- facility. The operational control over emissions at the Jupiter facility and assumption of all responsibility for said emissions by ConocoPhillips is a material element of the Department's issuance of this permit.
10. All systems within the ConocoPhillips refinery and Jupiter sulfur recovery facility (modifications) shall be totally enclosed and controlled such that any pollutant generated does not vent to atmosphere, except as expressly allowed in this permit (ARM 17.8.749).
 11. ConocoPhillips shall install and maintain the following burners:
 - a. The recycle hydrogen heater and fractionator feed heater shall be equipped with ultra low nitrogen oxide (NO_x) burners.
 - b. The 20.0-MMscfd hydrogen plant heater shall be equipped with ultra low NO_x burners with Flue Gas Recirculation (FGR).
 - c. The Sulfur Recovery Unit (SRU) Incinerator (F-304) shall be equipped with low NO_x burners.
 - d. The coker heater shall be equipped with low NO_x burners.²
 - e. The PMA process heater (H-3201) shall be equipped with low NO_x burners with FGR.
 12. ConocoPhillips shall operate and maintain two corrugated plate interceptor (CPI) separator tanks with carbon-canister total-VOC controls to comply with 40 CFR Part 60, Subpart QQQ, and 40 CFR Part 61, Subpart FF, regulations. The CPI separators will be vented to two carbon canisters, in series, designed and operated to reduce VOC emissions by 95%, or greater, with no detectable emissions. This CPI separator system will replace the existing American Petroleum Institute (API) separator system.
 13. ConocoPhillips shall comply with all applicable requirements of ARM 17.8.342, which reference 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants for Source Categories:
 - a. Subpart A, General Provisions, applies to all equipment or facilities subject to a NESHAP for source categories subpart as listed below.
 - b. Subpart R, National Emission Standards for Gasoline Distribution Facilities (Bulk Gasoline Terminals and Pipeline Breakout Stations), shall apply to, but not be limited to, the bulk loading rack.
 - c. Subpart CC, National Emission Standards for Hazardous Air Pollutants From Petroleum Refineries, shall apply to, but not be limited to, Miscellaneous Process Vents; Storage Vessels; Wastewater Streams; Equipment Leaks; and the Gasoline Loading Rack.
 14. ConocoPhillips shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements as specified in 40 CFR Part 63 (ARM 17.8.342).

² The low NO_x burners for the coker heater are a requirement of the coker Permit #2619 issued April 19, 1990.

15. The bulk loading gasoline and distillates loading rack shall be operated and maintained as follows:
- a. ConocoPhillips' loading rack shall be equipped with a vapor collection system designed to collect the organic compound vapors displaced from cargo tanks during product loading (ARM 17.8.342).
 - b. ConocoPhillips' collected vapors shall be routed to the VCU at all times. In the event the VCU was inoperable, ConocoPhillips may continue to load only distillates, provided the Department is notified in accordance with the requirements of ARM 17.8.110 (ARM 17.8.752).
 - c. The vapor collection and liquid loading equipment shall be designed and operated to prevent gauge pressure in the gasoline cargo tank from exceeding 4,500 Pascals (Pa) (450 millimeters (mm) of water) during product loading. This level shall not be exceeded when measured by the procedures specified in the test methods and procedures in 40 CFR 60.503(d) (ARM 17.8.342).
 - d. No pressure vacuum vent in the permitted terminal's vapor collection system shall begin to open at a system pressure less than 4,500 Pa (450 mm of water) (ARM 17.8.342).
 - e. The vapor collection system shall be designed to prevent VOC vapors collected at one loading position from passing to another loading position (ARM 17.8.342).
 - f. Loading of liquid products into cargo tanks shall be limited to vapor-tight gasoline cargo tanks using the following procedures (ARM 17.8.342):
 - i. ConocoPhillips shall obtain annual vapor tightness documentation described in the test methods and procedures in 40 CFR 63.425(e) for each gasoline cargo tank that is to be loaded at the loading rack.
 - ii. ConocoPhillips shall require the cargo tank identification number to be recorded as each gasoline cargo tank is loaded at the terminal.
 - iii. ConocoPhillips shall cross check each tank identification number obtained during product loading with the file of tank vapor tightness documentation within 2 weeks after the corresponding cargo tank is loaded.
 - iv. ConocoPhillips shall notify the owner or operator of each non-vapor-tight cargo tank loaded at the loading rack within 3 weeks after the loading has occurred.
 - v. ConocoPhillips shall take the necessary steps to ensure that any non-vapor-tight cargo tank will not be reloaded at the loading

rack until vapor tightness documentation for that cargo tank is obtained which documents that:

1. The gasoline cargo tank meets the applicable test requirements in 40 CFR 63.425(e) of this permit; and
 2. For each gasoline cargo tank failing the test requirements in 40 CFR 63.425(f) or (g), the gasoline cargo tank must either:
 - a. Before the repair work is performed on the cargo tank, meet the test requirements in 40 CFR 63.425 (g) or (h), or
 - b. After repair work is performed on the cargo tank before or during the tests in 40 CFR 63.425 (g) or (h), subsequently passes, the annual certification test described in 40 CFR 63.425(e).
- g. ConocoPhillips shall ensure that gasoline cargo tanks at the loading rack are loaded only into cargo tanks equipped with vapor collection equipment that is compatible with the terminal's vapor collection system (ARM 17.8.342).
- h. ConocoPhillips shall ensure that the terminal and the cargo tank vapor recovery systems are connected during each loading of a gasoline cargo tank at the loading rack (ARM 17.8.342).
- i. Loading of cargo tanks shall be restricted to the use of submerged fill and dedicated normal service (ARM 17.8.749).
- j. ConocoPhillips shall install and continuously operate a thermocouple and an associated recorder, or an ultraviolet flame detector and relay system, which will render the load rack inoperable if a flame is not present at the VCU flare tip, or any other equivalent device to detect the presence of a flame (ARM 17.8.342 and ARM 17.8.752).
- k. ConocoPhillips shall perform a monthly leak inspection of all equipment in gasoline service. The inspection must include, but is not limited to, all valves, flanges, pump seals, and open-ended lines. For purposes of this inspection, detection methods incorporating sight, sound, or smell are acceptable. Each piece of equipment shall be inspected during the loading of a gasoline cargo tank (ARM 17.8.342).
- l. A logbook shall be used and shall be signed by the owner or operator at the completion of each inspection. A section of the log shall contain a list, summary description, or diagram(s) showing the location of all equipment in gasoline service at the facility (ARM 17.8.342).
- m. Each detection of a liquid or vapor leak shall be recorded in the logbook. When a leak is detected, an initial attempt at repair shall be made as soon as practicable, but no later than 5 calendar days after the leak is detected. Repair or replacement of leaking equipment shall be completed within 15 calendar days after detection of each leak, except as provided in "n" below (ARM 17.8.342).

- n. Delay of repair of leaking equipment will be allowed upon a demonstration to the Department that repairs within 15 days is not feasible. The owner or operator shall provide the reason(s) a delay is needed and the date by which each repair is expected to be completed (ARM 17.8.342).
 - o. ConocoPhillips shall not allow gasoline to be handled in a manner that would result in vapor releases to the atmosphere for extended periods of time. Measures to be taken include, but are not limited to, the following:
 - i. Minimize gasoline spills.
 - ii. Clean up spills as expeditiously as practicable.
 - iii. Cover all open gasoline containers with a gasketed seal when not in use.
 - iv. Minimize gasoline sent to open waste collection systems that collect and transport gasoline to reclamation and recycling devices, such as oil/water separators (ARM 17.8.342).
16. Jupiter shall vent off-gas from the ASD unit operation to the B304 sulfur boiler except during malfunction or maintenance conditions, when the off-gases would be vented to the SRU flare (ARM 17.8.749).

B. Emission Limitations

- 1. Total refinery and sulfur recovery facility emissions shall not exceed the following:
 - a. SRU/ATS Main Stack
 - i. SO₂ Emissions - 25.00 lb/hr (167 ppm, rolling 12-hour average corrected to 0% oxygen on a dry basis); 0.300 ton/day.
 - ii. NO_x Emissions - 18.92 lb/hr, 454.0 lb/day, 82.85 ton/yr.
 - iii. PM₁₀ Emissions - 7.76 lb/hr, 186.3 lb/day, 34.00 ton/yr.
 - iv. Carbon Monoxide (CO) Emissions - 0.40 lb/hr, 1.76 ton/yr.
 - v. Ammonia - 13.36 lb/hr, 320.5 lb/day, 58.5 ton/yr.
 - vi. Opacity - 20% averaged over any 6 consecutive minutes.
 - b. SRU Flare³
 - i. SO₂ Emissions - 25.00 lb/hr, 0.300 ton/day.
 - ii. PM and CO emissions shall be kept to their negligible levels as indicated in the permit application.

³ Emissions occur only during times that the ATS plant is not operating.

- iii. Hydrogen sulfide (H₂S) content of the flare fuel gas (and pilot gas) burned shall not exceed 0.10 grain/dscf.
- iv. Opacity - 20% averaged over any 6 consecutive minutes.
- c. Total SO₂ emissions from the SRU/ATS main stack plus the SRU flare shall not exceed 109.5 tons/year (rolling 12-month average).
- d. Fluid Catalytic Cracking Unit (FCCU) Stack
 - i. SO₂ Emissions - 328.8 lb/hr, rolling 24-hour average; 3.945 ton/day; 1440 ton/yr.
 - ii. CO Emissions – 500 ppmvd at 0% O₂ based on a 1-hour average basis. Compliance shall not have to be demonstrated until certification of the CO CEMS, and future compliance shall be demonstrated with the CEMS (ConocoPhillips Consent Decree, paragraph 49).
 - iii. Opacity – not to exceed 20% averaged over 6 consecutive minutes. All opacity CEMS data associated with the monthly sandblasting operations shall be reported in the soot-blowing section of the monthly CEMS performance report.
- e. (22) Refinery Fuel Gas Heaters/Furnaces
 - i. SO₂ Emissions: 614 lb/day, rolling 24-hour average; and 45.5 ton/yr, rolling 12-month average (fuel gas combustion and the PB Merox Unit disulfide separator off gas incineration).
 - ii. H₂S content of fuel gas burned shall not exceed 0.10 grain/dscf (NSPS Fuel, 160 ppmv H₂S). Reference Section II.D.3.d.
 - iii. Opacity from the 22 Refinery Fuel Gas Heaters/Furnaces shall not exceed 40% averaged over any 6 consecutive minutes, except as required in Section II.B.1.h.vi.
- f. Main Boilerhouse Stack
 - i. SO₂ Emissions - 321.4 lb/hr, rolling 24-hour average; 3.857 ton/day; 1407.8 ton/yr (fuel oil and fuel gas combustion).
 - ii. SO₂ Emissions – 300 ton/yr based on a rolling 365-day average as determined by the existing SO₂ CEMS or replacement SO₂ CEMS subsequently installed and certified (ConocoPhillips Consent Decree, paragraph 71).
 - iii. H₂S content of fuel gas burned shall not exceed 0.10 grain/dscf.
 - iv. Opacity - 40% averaged over any 6 consecutive minutes.
- g. Refinery Flare Stack

- i. Hydrogen sulfide in the fuel gas burned shall not exceed 0.10 grain/dscf.
 - ii. SO₂ emission increases, due to upset conditions or discontinuance of the SRU, shall be offset by an equivalent rate from any other sources covered by this permit.
- h. Coker Heater, Recycle Hydrogen Heater, Fractionator Feed Heater, and Hydrogen Plant Heater
 - i. NO_x emissions from the Hydrogen Plant heater shall not exceed the limit of 0.03 lb/MMBtu. The furnace fuel gas shall be a low sulfur gas with a maximum 5 ppmv of sulfur compound. The Pressure Swing Absorption (PSA) purge gas used as furnace fuel shall be sulfur free (ARM 17.8.752).
 - ii. NO_x emissions from the Coker Heater shall not exceed the limit of 0.08 lb/MMBtu and 7.38 lb/hr (ARM 17.8.752).
 - iii. NO_x emissions from the Recycle Hydrogen Heater shall not exceed the limit of 0.03 lb/MMBtu (ARM 17.8.752).
 - iv. NO_x emissions from the Fractionator Feed Heater shall not exceed the limit of 0.03 lb/MMBtu (ARM 17.8.752).
 - v. The total NO_x emissions from the Coker Heater, Recycle Hydrogen Heater, Fractionator Feed Heater, and Hydrogen Plant Heater shall not exceed the limit of 13.54 lb/hr and 58.95 tons/year.
 - vi. Opacity from the Coker Heater, Recycle Hydrogen Heater, Fractionator Feed Heater, and Hydrogen Plant Heater shall not exceed 20% averaged over any 6 consecutive minutes.
- i. PMA Process Heater Stack
 - i. NO_x emissions shall not exceed the limit of 80 lb/MMscf or 0.76 lb/hr (ARM 17.8.752).
 - ii. The PMA Process Heater shall be fired on purchased natural gas only and shall not be fired on refinery fuel gas.
 - iii. Opacity - 20% averaged over any 6 consecutive minutes.
 - iv. Heater stack shall be 50 feet in height above grade, when the PMA Process Heater is operating.
- j. PMA Storage Tank Vent

Opacity shall not exceed 0%, except for one consecutive 15-minute period in any 24-hour period when the transfer lines are being blown clear (40 CFR 60.472(c)).

- k. Total SO₂ emissions for refinery and sulfur recovery facilities shall not exceed the limit of 3103 ton/yr (Items II.B.2.a - j). In addition, where applicable, all other federal emission limitations shall be met.
- 2. All access roads shall use either paving or chemical dust suppression as appropriate to limit excessive fugitive dust, with water as a back-up measure, to maintain compliance with ARM 17.8.308 and the 20% opacity limitation. Construction and earth-moving activities shall use reasonable precautions to limit excessive fugitive dust to mitigate impacts to nearby residential and commercial places.
- 3. Emissions from the loading of gasoline and distillates at the loading rack shall be limited to the following:
 - a. The total VOC emissions to the atmosphere from the VCU due to loading liquid product into cargo tanks shall not exceed 10.0 milligrams per liter (mg/L) of gasoline loaded (ARM 17.8.342 and ARM 17.8.752).
 - b. The total CO emissions to the atmosphere from the VCU due to loading liquid product into cargo tanks shall not exceed 10.0 mg/L of gasoline loaded (ARM 17.8.752).
 - c. The total NO_x emissions to the atmosphere from the VCU due to loading liquid product into cargo tanks shall not exceed 4.0 mg/L of gasoline loaded (ARM 17.8.752).
 - d. ConocoPhillips shall not cause or authorize to be discharged into the atmosphere from the enclosed VCU:
 - i. Any visible emissions that exhibit an opacity of 10% or greater (ARM 17.8.749); and
 - ii. Any particulate emissions in excess of 0.10 gr/dscf corrected to 12% CO₂ (ARM 17.8.749).
- 4. ConocoPhillips shall operate and maintain the Saturate Gas Plant according to the Leak Detection and Repair (LDAR) program. ConocoPhillips shall monitor and maintain all pumps, shutoff valves, relief valves, and other piping and valves associated with the Saturate Gas Plant, as described in 40 CFR 60.482-1 through 60.482-10. Records of monitoring and maintenance shall be maintained on site for a minimum of 2 years (ARM 17.8.342 and ARM 17.8.752).
- 5. ConocoPhillips shall not burn fuel oil in any of its heaters (ARM 17.8.749).
- 6. ConocoPhillips shall operate and maintain all new (associated with the Low Sulfur Gasoline (LSG) project) fugitive component VOC emissions in the No. 2 Hydrodesulfurization (HDS) Unit, the Gas Oil Hydrodesulfurizer (GOHDS) Unit, and the Tank Farm (including those fugitive emissions associated with the LSG tank) according to the LDAR program (ARM 17.8.342; ARM 17.8.752; and 40 CFR 63, Subpart CC).

C. Testing Requirements - NSPS and NESHAP

- 1. ConocoPhillips shall meet the requirements of all testing and procedures of ARM 17.8.340, which reference 40 CFR Part 60, NSPS, Subpart J, Standards of

Performance for Petroleum Refineries. This shall apply to, but not be limited to, all of the heaters and boilers (with the exception of H-16, the heater that combusts the P-B Merox vent line, until June 30, 2003, when it will become subject) at the ConocoPhillips refinery and the Claus units at the Jupiter sulfur recovery facility and any other applicable equipment.

2. ConocoPhillips shall meet the requirements of all testing and procedures of ARM 17.8.340, which reference 40 CFR Part 60, NSPS, Subpart Ka, Standards of Performance for Volatile Organic Liquid Storage Vessels. This shall apply to all volatile organic storage vessels (including petroleum liquid storage vessels) for which construction, reconstruction or modification commenced after May 18, 1978, and prior to July 23, 1984. These requirements shall be as specified in 40 CFR 60.110a through 60.115a. The affected tanks include, but are not limited to, the following:

Tank Number

#100-Ka*
#101-Ka*
#102-Ka
#104-Ka*

* Currently exempt from all emission control provisions due to vapor pressure of materials stored.

3. ConocoPhillips shall meet the requirements of all testing and procedures of ARM 17.8.340, which reference 40 CFR Part 60, NSPS, Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels. This shall apply to all volatile organic storage vessels (including petroleum liquid storage vessels) for which construction, reconstruction or modification commenced after July 23, 1984. The affected tanks include, but are not limited to, the following:

Tank Number

#36-Kb
#72-Kb
#107-Kb*
#110-Kb*
#162-Kb*
#T-3201*
#T-4524

* Currently exempt from all emission control provisions due to vapor pressure of materials stored.

- a. These requirements shall be as specified in 60.112b, 60.113b, 60.114b, 60.115b, 60.116b, and 60.117b.
- b. ConocoPhillips shall keep copies of all reports and records required by 40 CFR Part 60.115b for at least 2 years and shall make those copies available for inspection by Department personnel at the location of the permitted source.

4. ConocoPhillips shall meet the requirements of all testing and procedures of ARM 17.8.340, which reference 40 CFR Part 60, NSPS, Subpart GGG, Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries. This shall

apply to, but not be limited to, the delayed coker unit, cryogenic unit, hydrogen membrane unit, gasoline mercox unit, crude vacuum unit, gas oil hydrotreater unit (consisting of a reaction section, fractionation section, and an amine treating section), 20.0-MMscfd hydrogen plant feed system, Alkylation Unit Butane Defluorinator Project (consisting of heat exchangers X-453, X-223, X-450, X-451, X-452; pump P-646; and vessels D-130, D-359, D-360), PMA process unit, Alkylation Unit Depropanizer Project, and any other applicable equipment constructed or modified after January 4, 1983.

5. ConocoPhillips shall meet the requirements of all testing and procedures of ARM 17.8.340, which reference 40 CFR Part 60, NSPS, Subpart QQQ, Standards of Performance for Volatile Organic Compound Emissions from Petroleum Refinery Wastewater Systems. This shall apply to, but not be limited to, the coker unit drain system, desalter wastewater break tanks, CPI separators, gas oil hydrotreater, 20.0-MMscfd hydrogen plant, C-23 compressor station, Alkylation Unit Butane Defluorinator Project, Alkylation Unit Depropanizer Project, and any other applicable equipment.
6. ConocoPhillips shall meet the requirements of all testing and procedures of ARM 17.8.342, which reference 40 CFR Part 63, MACT, Subpart R, NESHAPs for Gasoline Distribution Terminals. This shall apply to, but not be limited to, the bulk gasoline and distillate loading rack, the vapor processing system, and all gasoline equipment.

D. Emission Testing and Reporting

1. ConocoPhillips shall verify the refinery SO₂ and NO_x emission reductions from the main boiler on a monthly basis and report those results to the Department within 30 days of the end of each month. The report shall contain all necessary data from the sour water stripper gas stream and continuous emission stack monitor such that the SO₂ and NO_x reduction can be both quantifiable and verifiable.
2. ConocoPhillips shall report to the Department any time in which the sour water stripper stream from the refinery is diverted away from the sulfur recovery facility. Said excess emission reports shall include the period of diversion, estimate of lost raw materials (H₂S and ammonia (NH₃)), and resultant pollutant emissions, including circumstances explaining the diversion of this stream. Said excess emission reports shall discuss what corrective actions will be taken to prevent recurrences of the situation and what caused the upset. These reports shall address, at a minimum, the requirements of ARM 17.8.110.
3. ConocoPhillips shall install and operate the following CEMS/continuous emission rate monitors (CERMs):
 - a. SRU/ATS Stack
 - i. SO₂
 - ii. Oxygen
 - iii. Volumetric flow rate

b. FCCU Stack

- i. SO₂
- ii. Volumetric flow rate
- iii. Opacity

c. Main Boiler Stack

- i. SO₂
- ii. Volumetric flow rate

Said monitors shall comply with all applicable provisions of 40 CFR Part 60, Subpart J, 60.100-106, and Appendix B, Performance Specifications 1, 2, 3 and 6.

d. Main Boiler and (22) Refinery Fuel Gas Heaters/Furnaces

Continuous Hydrogen Sulfide Refinery Fuel Gas System Monitoring - Continuous refinery fuel gas monitoring system for H₂S shall meet all performance specifications, methods and procedures. Hydrogen sulfide concentration monitor on the fuel gas system shall meet 40 CFR Part 60, Appendix B, Performance Specification 7.

e. Flare(s) (Refinery and SRU Facility) Stack

- i. Flow rate metering from upset or malfunctioning process units that are directed to the flare shall use approved standards, methods, accounting procedures, and engineering data.
- ii. Recordkeeping requirements (see II.E.2 - 3).

4. Enforcement of Item II.B.3 requirements, where applicable, shall be determined by utilizing data taken from CEMS and other Department-approved sampling methods. However, opacity compliance may also be determined via EPA Reference Method 9 by a certified observer or monitor.

- a. The above does not relieve ConocoPhillips from meeting any applicable requirements of 40 CFR Part 60, Appendices A and B, or other stack testing that may be required by the Department.
- b. Other stack testing may include, but is not limited to, the following air pollutants: SO₂, NO_x, NH₃, CO, particulate matter (PM and PM₁₀), and VOCs.
- c. Reporting requirements shall be consistent with 40 CFR Part 60, or as specified by the Department.
- d. All gaseous continuous emission monitors shall be required to comply with quality assurance/quality control procedures in 40 CFR Part 60, Appendix F. Said CEMS shall be required to be maintained such that they are available and operating at least 90% of the source operating time during any reporting period (quarterly).

- e. CEMS are to be in operation at all times when the emission units are operating, except for quality assurance and control checks, breakdowns and repairs. In the event the primary CEMS is unable to meet minimum availability requirements, ConocoPhillips shall provide a back-up or alternative monitoring system and plan such that continuous compliance can be demonstrated. The Department shall approve such contingency plans.
5. Compliance testing and continuous monitor certification shall be as specified in 40 CFR Part 60, Appendices A and B. Test methods and procedures, where there is more than one option for any given pollutant, shall be worked out with the Department prior to commencement of testing.
 6. ConocoPhillips shall conduct compliance testing and continuous monitor certification as specified in 40 CFR Part 60, Appendices A and B, within 180 days of initial start up of the affected facility.
 7. ConocoPhillips shall conduct compliance source tests on the Jupiter main stack for total particulate (TSP), PM₁₀, and NO_x to determine compliance with the applicable emission standards in Section II.B.1.a in 1998, 2002, and every 5 years thereafter.
 8. ConocoPhillips shall conduct compliance source tests on the Coker Heater for NO_x to determine compliance with the emission limitations in Section II.B.2.h.ii within 180 days of issuance of Permit #2619-09.
 9. The bulk loading rack VCU shall be initially tested for total organic compounds, and compliance demonstrated with the emission limitation contained in Section II.B.3.a within 180 days of initial start up and every 5 years after the initial test. ConocoPhillips shall conduct the test methods and procedures as specified in 40 CFR 63.425, Subpart R (ARM 17.8.105 and 17.8.342).
 10. The bulk loading rack VCU shall be initially tested for CO and NO_x, and compliance demonstrated with the emission limitations contained in Section II.B.3.b and c within 180 days of initial start up (ARM 17.8.105).
 11. ConocoPhillips shall use ASTM method D-3246, or another method as approved by the Department, to conduct monthly sampling of the PB Merox Unit disulfide separator off-gas stream to determine total sulfur (ppmw) present. After 1 year of sampling, and upon the approval of the Department, ConocoPhillips may reduce the sampling frequency of the PB Merox Unit disulfide-separator gas stream to once per quarter. Further sampling frequency reductions may be granted with the approval of the Department.

The PB Merox Unit disulfide separator gas analysis combined with the off-gas stream flow rate will be used to calculate SO₂ emissions attributable to the incineration of the off-gas stream. ConocoPhillips shall, on a monthly basis, calculate and report to the Department the SO₂ emissions from the incineration of the off-gas stream.
 12. All compliance source tests shall be conducted in accordance with the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).
 13. The Department may require further testing (ARM 17.8.105).

E. Monitoring and Reporting

1. ConocoPhillips shall install, operate and maintain the applicable CEMS/CERMS listed in II.D.3.a through d. Emission monitoring shall be subject to 40 CFR Part 60, Subpart J, Appendix B (Performance Specifications 1, 2, 3, 6 and 7) and Appendix F (Quality Assurance/Quality Control) provisions. Any stack testing requirements that may be required (in Section II.D.4) shall be conducted according to 40 CFR Part 60, Appendix A and ARM 17.8.105, Testing Requirements provisions.
2. ConocoPhillips shall provide monthly emission reports from said emission rate monitors. Emission reporting for SO₂ from all point source locations shall consist of 24-hour calendar-day totals per calendar month. The monthly report shall also include the following:
 - a. Source or unit operating time during the reporting period.
 - b. Monitoring down time, which occurred during the reporting period.
 - c. A summary of excess emissions for each pollutant and averaging period identified in II.B.1 a through j.
 - d. Emission estimates for NO_x and NH₃ from material balance, engineering calculation data, and any emission testing.
 - e. Reasons for any emissions in excess of those specifically allowed in II.B.1 with mitigative measures utilized and corrective actions taken to prevent a recurrence of the upset situation.

ConocoPhillips shall submit monthly emission reports within 30 days of the end of each calendar month.

3. ConocoPhillips shall keep the Department apprised of the status of construction, dates of performance tests, and continuous compliance status for each emission point and pollutant. Specifically, the following report and recordkeeping shall be required in writing.
 - a. Notification of date of construction commencement, cessation of construction, restarts of construction, startups, initial emission tests, monitor certification tests, etc.
 - b. Submittal for review by the Department of the emissions testing plan, results of initial compliance tests, continuous emission monitor certification tests, continuous emission monitoring and continuous emission rate monitoring quality assurance/quality control plans, and excess emissions report within the 180-day shakedown period.
 - c. Copies of said monthly emissions report, excess emissions, and all other such items mentioned in II.E.3.a and b above shall be submitted to both the Billings regional office and the Helena office of the Department.
 - d. Monitoring data shall be maintained for a minimum of 5 years at the ConocoPhillips Refinery and Jupiter sulfur recovery facilities.

- e. All data and records that are required to be maintained must be made available upon request by representatives of the Department or the U.S. Environmental Protection Agency (EPA).

4. ConocoPhillips shall record the PB Merox Unit Stream Rotameter reading at least once during every shift. This reading shall be used to determine the mass flow rate of the stream and shall be used in coordination with the sampling of the PB Merox Unit disulfide-separator off-gas stream to determine total sulfur (ppmw) present. After ConocoPhillips has collected the data for a period of 1 year, the Department may review the data and reduce the monitoring frequency of the PB Merox Unit disulfide stream if ConocoPhillips can demonstrate that the flow rate is consistent.

F. Additional Reporting Requirements - NSPS, NESHAP, and MACT

1. ConocoPhillips shall keep records and furnish reports to the Department as required by 40 CFR Part 60, NSPS, Subpart Kb. These reports shall include information described in 40 CFR 60.115b.
2. ConocoPhillips shall provide copies to the Department, upon the Department's request, of any records of tank testing results required by 40 CFR 60.113b and monitoring of operations required by 40 CFR 60.116b. Records will be available according to the time period requirements as described in 40 CFR 60.115b and 40 CFR 60.116b.
3. ConocoPhillips shall conduct all applicable recordkeeping and reporting requirements in accordance with 40 CFR Part 60, Subpart QQQ.
4. ConocoPhillips shall provide the Department copies of testing results, monitoring operations, recordkeeping and report results as specified under 40 CFR Part 60, Subpart QQQ, Sections 60.693-2, 60.696, 60.697, and 60.698.
5. ConocoPhillips shall monitor the exhaust vent stream from the waste water CPI separators carbon-adsorption system (T-169 & T-170 carbon canisters) on a regular schedule according to the requirements contained in 40 CFR Part 60, Subpart QQQ, Section 60.695(a)(3)(ii) and 40 CFR Part 61 Subpart FF, Section 61.354(d). The existing carbon shall be replaced with fresh carbon immediately when carbon breakthrough is indicated. The device shall be monitored at intervals not to exceed 14.4 hours, when the waste water treatment is operational. The time period may be revised by the Department in the event that the carbon absorption system is upgraded or physically altered.
6. ConocoPhillips shall supply the Department's Permitting and Compliance Division with the reports as required by 40 CFR Part 61, NESHAP Subpart FF, Benzene Waste Operations.
7. ConocoPhillips shall keep all records and furnish all reports to the Department as required by 40 CFR Part 63, Subpart R, NESHAPs for Gasoline Distribution Facilities. These reports shall include information described in 40 CFR 63.424, 63.427, and 63.428.
8. ConocoPhillips shall keep all records and furnish all reports to the Department as required by 40 CFR Part 63, Subpart CC, NESHAPs for Petroleum Refineries.

G. Operational Reporting Requirements

ConocoPhillips shall supply the Department with annual production information for all emission points, as required by the Department in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in the most recent emission inventory report and sources identified in this permit.

Production information shall be gathered on a calendar-year basis and submitted to the Department by the date required in the emission inventory request. Information shall be in the units required by the Department. This information is required for the annual emission inventory and to verify compliance with permit limitations. The information supplied shall include the following (ARM 17.8.505):

Sources - ConocoPhillips

<u>Emission Point</u>	<u>Source</u>	<u>Consumption</u>
1	Four (4) Boilers	MMscf of gas, %H ₂ S gal of fuel oil, %S
2	Heater #1	MMscf of gas, %H ₂ S
3	Heater #2	MMscf of gas, %H ₂ S
4	Heater #4	MMscf of gas, %H ₂ S
5	Heater #5	MMscf of gas, %H ₂ S
6	Coker Heater	MMscf of gas, %H ₂ S
7	Heater #10	MMscf of gas, %H ₂ S
8	Heater #11	MMscf of gas, %H ₂ S
9	Heater #12	MMscf of gas, %H ₂ S
10	Heater #13	MMscf of gas, %H ₂ S
11	Heater #14	MMscf of gas, %H ₂ S
12	Heater #15	MMscf of gas, %H ₂ S
13	Heater #16	MMscf of gas, %H ₂ S
14	Heater #17	MMscf of gas, %H ₂ S
15	Heater #18	MMscf of gas, %H ₂ S
16	Heater #19	MMscf of gas, %H ₂ S
17	Heater #20	MMscf of gas, %H ₂ S
18	Heater #21	MMscf of gas, %H ₂ S
19	Heater #22	MMscf of gas, %H ₂ S
20	Heater #23	MMscf of gas, %H ₂ S
21	Heater #24	MMscf of gas, %H ₂ S
22	FCC Unit	Tons of SO ₂ /yr
23	Flare	Tons of SO ₂ /yr
24	Storage Tanks	Tons VOC losses/yr
25	Bulk Loading - Gasoline	Gallons of gasoline throughput Gallons of distillate throughput
26	Fugitive VOC Emissions:	

- a. The number of the following fugitive VOC emission sources in service subject to 40 CFR Part 60, Subpart GGG.
 - i. Gas valves
 - ii. Light liquid valves
 - iii. Heavy liquid valves
 - iv. Hydrogen valves
 - v. Open-end valves
 - vi. Flanges
 - vii. Pump seals/light liquid

- viii. Pump seals/heavy liquid
- ix. Process drains
- x. Oil/water separators

b. The number of the following fugitive VOC emission sources in service not subject to 40 CFR Part 60, Subpart GGG.

- i. Valves
- ii. Flanges
- iii. Pump seals
- iv. Compressor seals
- v. Process drains
- vi. Relief valves
- vii. Cooling towers
- viii. Oil/water separators

27	CPI separator tanks	Gallons of wastewater throughput
28	Recycle hydrogen heater	MMscf of gas, %H ₂ S
29	Fractionator feed heater	MMscf of gas, %H ₂ S
30	20.0-MMscfd hydrogen plant	
	SMR heater	MMscf of natural gas
		MMscf of PSA gas
31	PMA process heater	MMscf of natural gas
32	Saturate Gas Plant	Monitoring and maintenance records

Sources - Jupiter

<u>Emission Point</u>	<u>Source</u>	<u>Consumption</u>
1	Main ATS Stack	
	a. ATS unit	Tons of product produced
	b. Elemental sulfur unit	Tons of product produced
2	Jupiter Flare -	
	Ammonium sulfide unit	Tons of product produced

For reporting purposes, the equipment should be identified using the emission point numbers specified.

H. Notification

ConocoPhillips shall provide the Department with written notification of the following dates within the specified time periods.

1. Pretest information forms must be completed and received by the Department no later than 25 working days prior to any proposed test date, according to the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).
2. The Department must be notified of any proposed test date 10 working days before that date, according to the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).
3. ConocoPhillips shall notify the Department of any construction or improvement project conducted pursuant to ARM 17.8.745(1) that would include a change in

control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation or the addition of a new emission unit. The notice must be submitted to the Department, in writing, 10 days prior to startup or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.745(1)(d) (ARM 17.8.745).

4. ConocoPhillips shall notify the Department of the date of construction commencement for the low sulfur gas project no later than 30 days after construction commencement (ARM 17.8.340, ARM 17.8.749, and 40 CFR 60.7 for NSPS-applicable sources).
5. ConocoPhillips shall notify the Department of the actual start-up date of the low sulfur gas project to be postmarked within 15 days after the actual start-up date (ARM 17.8.340, ARM 17.8.749, and 40 CFR 60.7 for NSPS-applicable sources).

SECTION III: General Conditions

- A. Inspection - The recipient shall allow the Department's representatives access to the source at all reasonable times for the purpose of making inspections or surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.
- B. Waiver - The permit and all the terms, conditions, and matters stated herein shall be deemed accepted if the recipient fails to appeal as indicated below.
- C. Compliance with Statutes and Regulations - Nothing in this permit shall be construed as relieving the permittee of the responsibility for complying with any applicable federal or Montana statute, rule or standard, except as specifically provided in ARM 17.8.740, *et seq.* (ARM 17.8.756)
- D. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties or other enforcement as specified in Section 75-2-401 *et seq.*, MCA.
- E. Appeals - Any person or persons who are jointly or severally adversely affected by the Department's decision may request, within 15 days after the Department renders its decision, upon affidavit setting forth the grounds therefore, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The Department's decision on the application is not final unless 15 days have elapsed and there is no request for a hearing under this section. The filing of a request for a hearing postpones the effective date of the Department's decision until the conclusion of the hearing and issuance of a final decision by the Board.
- F. Permit Inspection - As required by ARM 17.8.755, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by Department personnel at the location of the permitted source.

- G. Construction Commencement - Construction must begin within 3 years of permit issuance and proceed with due diligence until the project is completed or the permit shall be revoked.
- H. Permit Fees - Pursuant to Section 75-2-220, MCA, as amended by the 1991 Legislature, failure to pay by the permittee of an annual operation fee may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board.

PERMIT ANALYSIS
ConocoPhillips Company, Billings Refinery
Permit #2619-17

I. Introduction/Process Description

A. Source Description

The ConocoPhillips Company, Billings Refinery (ConocoPhillips) is located at 401 South 23rd Street, Billings, Montana, in the NW¼ of Section 2, Township 1 South, Range 26 East, in Yellowstone County. The refinery property is adjacent to the City of Billings and is next to Interstate 90 and the Yellowstone River. Residential properties exist on the west side of the refinery and the United States Postal Service has an office located on the south side of the property.

The refinery processes 50,000 barrels per day of crude oil and produces a wide range of petroleum products, including propane, gasoline, kerosene/jet fuel, diesel, and petroleum coke. ConocoPhillips has received several air quality permits throughout the past years for various pieces of equipment and operations. All previously permitted equipment, limitations, conditions, and reporting requirements stated in Permits #1719, #2565, #2669, #2619, and #2619A were included in Permit #2619-02.

B. Permit History

On October 29, 1982, Conoco Inc. (Conoco) received an air quality permit for an emergency flare stack to be equipped and operated with steam injection. This application was given **Permit #1719**.

On June 2, 1989, Conoco received an air quality permit to convert an existing 5000-barrel cone roof tank (#49) to an internal floating roof with double seals. This conversion was necessary in order to switch service from diesel to aviation gasoline storage. The application was given **Permit #2565**.

On January 29, 1991, Conoco received an air quality permit to construct and operate two 2000-barrel desalter wastewater break tanks equipped with external floating roofs and double-rim seals. The new tanks were to augment the refinery's ability to control fugitive Volatile Organic Compound (VOC) emissions and enhance recovery of oily water from the existing wastewater treatment system. The application was given **Permit #2669**.

On April 19, 1990, Conoco received an air quality permit to construct new equipment and modify existing equipment at the refinery and to construct a sulfur recovery facility, operated by Kerley Enterprises under the control of Conoco, as part of the overall Conoco project. The application was given **Permit #2619**.

Conoco was permitted to construct a new 13,000-barrels-per-stream-day delayed petroleum coker unit, cryogenic gas plant, gasoline treating unit, and hydrogen system additions. Also, modifications to the existing crude and vacuum distillation units, hydrodesulfurization units, amine treating units and wastewater treatment system were permitted.

Conoco was also permitted to construct a sulfur recovery facility (SRU)/ammonium thiosulfate (ATS) to be operated by Kerley Enterprises. This facility is operated in conjunction with the new installations and modifications at the Conoco Refinery. This

facility was permitted with the capability of utilizing 109.9 long tons per day of equivalent sulfur obtained from the Conoco Refinery for the manufacture of elemental sulfur and sulfur-containing fertilizer solutions (i.e., ATS).

On December 4, 1991, Conoco was issued **Permit #2619A** for the construction of a 1000-barrel hydrocarbon storage tank (T-162). The new tank stores recovered hydrocarbon product from the contaminated groundwater aquifer beneath the Conoco Refinery. Over the years, surface discharges at the refinery contaminated the groundwater with oily hydrocarbon products. The purpose of this project was to recover hydrocarbon product (oil) from the groundwater aquifer beneath the refinery. The hydrocarbon product (oil) is pumped out of a cone of depression within the contaminated groundwater aquifer. Groundwater, less the recovered hydrocarbon product, is returned to the aquifer. The application addressed the increase in VOC emissions from the storage of recovered hydrocarbon product.

On March 5, 1993, Conoco was issued **Permit #2619-02** for the construction and operation of a 5.0-MMscf-per-day hydrogen plant and to replace their existing American Petroleum Institute (API) separator system with a corrugated plate interceptor (CPI) separator system. This permit was an alteration to Conoco's existing Permit #2619 and included all previously permitted equipment, limitations, conditions, and reporting requirements stated in Permits #1719, #2565, #2669, #2619, and #2619A.

The natural gas feedstock to the new hydrogen plant produces 99.9% pure hydrogen. This hydrogen and hydrogen from the existing catalytic reformers is routed to the refinery hydrotreaters to reduce fuel product sulfur content. The H₂S produced is routed to the Jupiter SRU/ATS, operated by Kerley Enterprises, which produces sulfur and fertilizer products.

The two new CPI separator tanks with carbon canister total VOC controls were constructed to comply with 40 Code of Federal Regulations (CFR) Part 60, Subpart QQQ, and 40 CFR Part 61, Subpart FF, regulations. The CPI separators were vented to two carbon canisters in series. Each carbon canister was designed and operated to reduce VOC emissions by 95% or greater, with no detectable emissions. This CPI separator system replaced the existing API separator system.

As per a letter received by the Department of Environmental Quality (Department), December 22, 1992, ownership of the Kerley Enterprises facility was transferred to Jupiter Sulphur, Inc. as of December 31, 1992.

On September 14, 1993, Conoco was issued **Permit #2619-03** for the construction and operation of a gas oil hydrotreater and associated hydrogen plant at the Billings Refinery. The new hydrotreater desulfurizes a mixture of Fluid Catalytic Cracker (FCC) feed gas oils, which allows the FCC to produce low-sulfur gasoline. This low-sulfur gasoline was required by January 1, 1995, to satisfy EPA's gasoline sulfur provisions of the Federal 1990 Clean Air Act Amendments. Hydrogen requirements are met by the installation of a hydrogen plant, and sulfur recovery capacity was provided by installing additional elemental liquid sulfur production facilities at the Jupiter Sulphur, Inc. plant adjacent to the refinery.

The Gas Oil Hydrodesulfurizer (GOHDS) was designed to meet the primary objective of removing sulfur from the FCC feedstock. A combination of gas oils feed the Gas Oil Hydrotreater. The gas oils are mixed with hydrogen, heated, and passed over a catalyst bed where desulfurization occurs. The gas oil is then fractionated into several products, cooled, and sent to storage. A steam-methane reforming hydrogen plant produces makeup hydrogen for the unit. Any unconsumed hydrogen is amine treated for hydrogen H₂S removal and recycled.

The new project did not increase refinery capacity. The project did not constitute a major modification for purposes of the Prevention of Significant Deterioration (PSD) program since net emissions did not increase in significant amounts as defined by the Administrative Rules of Montana (ARM) 17.8.801(20)(a).

The additional fugitive VOC emissions from this project were calculated by totaling the fugitive sources on the process units. These sources included flanges, valves, relief valves, process drains, compressor seal degassing vents and accumulator vents and open-ended lines. The fugitive source tabulation was then used with actual refinery emission factors obtained from the Conoco Refinery in Ponca City, Oklahoma. Furthermore, it was intended that each non-control valve in VOC service would be repacked with graphite packing to Conoco standards before installation. All control valves for the GOHDS project would be Enviro-Seal valves or equivalent. The Enviro-Seal valves have a performance specification that exceeds the Subpart GGG standards. The VOC emissions will be validated by 40 CFR Part 60, Subpart GGG, emission monitoring.

The Jupiter Sulphur, Inc. Recovery Facility consists of three primary units: the existing ATS Plant, the existing ATS Unit and the new Claus Sulfur and Tail Gas Treating Units (TGTU). The addition of the new units increased the total sulfur recovery capacity of the facility from 110 to 170 LT/D (long tons per day) of sulfur.

The existing ATS plant consisted of a thermal Claus reaction-type boiler. The exit gas from this Claus boiler is incinerated in the ATS Unit. The sulfur dioxide (SO_2) from the incinerator is absorbed and converted to ammonium bisulfite (ABS). The ABS is then used to absorb and react with H_2S to produce the ATS product. Up to 110 LT/D of sulfur can be processed by the ATS Plant to produce sulfur and ATS.

The Ammonium Sulfide Unit (ASD) consists of an absorption column, which absorbs the sulfur as H_2S in the acid gas feed and reacts with ammonia (NH_3) and water. When the new Claus Sulfur Unit was added, the Sulfur Recovery Facility was modified to incinerate any off gas from this unit in the TGTU and ATS Plant. This eliminates off-gas flow to, and emissions from, the flare. Up to 110 LT/D of sulfur can be processed by the ASD to produce ammonium sulfide solution.

The proposed Claus Sulfur Unit consisted of a thermal Claus reaction furnace, followed by a waste heat boiler and three catalytic Claus reaction beds. The Claus tail gas is then incinerated before entering the TGTU. In this new unit, SO_2 from the incinerator was absorbed and converted to ABS. This ABS is then transferred to the ATS Unit for conversion to ATS. Up to 110 LT/D of sulfur can be processed by the new Claus Sulfur Unit to produce sulfur and ABS. The ABS from the TGTU is dilute, containing a significant amount of water that was generated from the Claus reaction. To prevent making a dilute ATS from this "weak" ABS, a new ATS Reactor was added to the ATS Unit. This ATS Reactor combines "weak" ABS, additional ABS, and sulfur to make a full-strength ATS solution.

An important feature of the Jupiter Sulphur, Inc. facility is its capability to process Conoco Inc.'s sour gases at all times. A maximum of 170 LT/D of sulfur is recovered and each of the three units has a capacity of 110 LT/D. If any one of the three is out of service, then the other two can easily handle the load. While the process has 100% redundancy, any two of the three units must be running to handle the design load. The process uses high-efficiency gas filters, which employ a water-flushed coalescer cartridge to reduce particulate, as well as sulfur compounds.

On November 11, 1993, Conoco was issued **Permit #2619-04** to construct and operate a new compressor station and associated equipment at the Billings Refinery. The C-23 compressor station project involved the recommissioning of an out-of-service compressor and associated equipment components having fugitive VOC emissions. The project also involved the installation of new equipment components having fugitive VOC emissions. The recommissioned compressor was originally installed in 1948. The compressor underwent some minor refurbishing, but did not trigger "reconstruction" as defined in 40 CFR 60.15.

The purpose of the C-23 compressor station project was to improve the economics of the refinery's wet gas (gas streams containing recoverable liquid products) processing through increased yields and more efficient operation in the refinery's large and small Crude Topping Units (CTUs) and the Alkylation Unit. The project also improved safety in the operations of the two CTUs, Alkylation Unit, and Gas Recovery Plant (GRP). As a result of this project, the vapor pressure of the alkylate product (produced by the Alkylation Unit) was lowered.

On February 2, 1994, Conoco was issued **Permit #2619-05** to construct and operate a butane defluorinator within the alkylation unit at the refinery. Installation of an alumina (Al_2O_3) bed defluorinator system was to remove residual hydrofluoric acid (HF) and organic fluorides from the butane stream produced by the Alkylation Unit. This reduced the fluorine level of the butane from ~ 500 ppmw to ~ 1 ppmw, which allows the butane to be recycled back to the refinery's Butamer Unit for conversion into isobutane. Refer to the permit application for a more thorough description of the process and proposed changes.

The Alkylation Unit Butane Defluorinator Project resulted in: (1) changes in operation of the alkylate stabilization train of the Alkylation Unit to yield defluorinated butane instead of fluorinated and lower vapor pressure alkylate products; (2) changes in operation of the refinery's gasoline blending to restructure butane blending and lower the vapor pressure of the gasoline pool; (3) minimized butane sales; (4) minimized butane burning as refinery fuel gas; and (5) economized gasoline blending of butane.

On March 28, 1994, Conoco was issued **Permit #2619-06** to construct and operate equipment to support a new Polymer Modified Asphalt (PMA) Unit at the refinery. The PMA project allowed Conoco to produce asphalt that meets the new federal specifications and to become a supplier of PMA for the region.

Installation of a 9.5-MMBtu/hr natural gas-fired process heater to heat an oil heat transfer fluid supplies heat to bring the asphalt base to 400°F. This allows a polymer material to be mixed with it to produce PMA. A hot oil transfer pump was installed to circulate hot oil through the system. A heat exchanger (X-364) from the shutdown Propane Deasphalting (PDA) Unit was moved and installed to aid in the heating of the asphalt base. Two existing 5000-bbl asphalt storage tanks were converted to PMA mixing and curing tanks. This required the installation of additional agitators, a polymer pellet loading (blower) system and conversion of the tank steamcoil heating system to hot oil heated by the new process heater. New asphalt transfer lines, a new asphalt transfer pump, and a new 5000-bbl PMA storage tank (to replace the demolished T-50) were installed to keep the PMA separated from other asphalt products.

This permit alteration also addressed the items submitted in a letter dated November 23, 1993, for supplemental information and a request for permit clarification for Conoco's Permit #2619-03. This permit clarifies all these items, as appropriate, including the issues

relating to the redesign of the SRU stack and the addition of heated air to the stack. Reference Section VI, Air Quality Impacts.

On July 28, 1995, Conoco was issued **Permit #2619-07** for the construction and operation of new equipment within the refinery's Alkylation (Alky) and Gas Recovery Plant/No. 1 Amine Units. The project was referred to as the Alkylation Unit Depropanizer Project.

The existing Alkylation Unit was replaced with a new tower. The new depropanizer is located where the No. 1 Bio-pond was located. Piping and valves were added, and existing equipment was located next to the new depropanizer. The old depropanizer was retained in place and may be used in the future in non-Hydrogen Fluoride (HF) service.

The decommissioned PDA Unit evaporator tower (W-3) was converted to a water wash tower to remove entrained amine from the Alky PB (Propane/Butene) olefins upstream of the PB merox prewash. New piping, valves, and instrumentation were added around W-3.

The change in air emissions associated with this project was an increase in fugitive VOC emissions, as well as additional emission of fluorides due to the installation of the new depropanizer piping and valves.

The changes made by this project were not subject to PSD review since the sum of the emission rate increases were below PSD significant emission rates for applicable pollutants.

The drains installed or reused tie into parts of the refinery's wastewater sewer system that are already subject to Standards of Performance for New Stationary Sources (NSPS), Subpart QQQ (Wastewater Treatment System VOC Emissions in Petroleum Refineries) and National Emission Standards for Hazardous Air Pollutants (NESHAP), Subpart FF (Benzene Waste Operations). These drains were equipped with tight fitting caps and have hard pipe connections to meet the required control specifications.

On July 24, 1996, Conoco was issued **Permit #2619-08** to change the daily SO₂ emissions limit of the 19 existing process heaters, as well as combining the 19 heaters, the Coker heater (H-3901), and the GOHDS heaters (H-8401 and H-8402) into one SO₂ point source within the Refinery. The project is referred to as the Existing Heater Optimization Project.

The 19 process heaters being discussed in this application are the process heaters (excluding H-3 and H-7) that were in operation prior to the construction of the Delayed Coker/Sulfur Reduction Project, which became fully operational in May of 1992. The 19 heaters are: H-1, H-2, H-4, H-5, H-10, H-11, H-12, H-13, H-14, H-15, H-16, H-17, H-18, H-19, H-20, H-21, H-22, H-23, and H-24. These 19 heaters are pooled together and regulated as one source referred to as the "19-Heater" source. Also included in this discussion are the Coker heater (H-3901) and the GOHDS heaters (H-8401 and H-8402).

The existing 19 heaters have a "bubbled" SO₂ permit emission limit of 30.0 ton per year (TPY) (164 lb/day) and a limitation of fuel gas H₂S content of 160 ppmv (0.1 grains/dscf). With both these limitations intact, all of these heaters cannot simultaneously operate at their maximum design firing rates. This can cause un-optimized operation of the Refinery during unfavorable climatical conditions or during peak heater demand periods.

To allow all 19 heaters to simultaneously operate at their maximum firing rates, the allowable short term SO₂ emission limit for the "bubbled" 19 heaters must be increased. The (19) Refinery Fuel Gas Heaters/Furnaces lb/day SO₂ emission limitation was based on NSPS fuel gas (160 ppm H₂S), maximum heat input (MMBtu/hr) from the emission inventory database (AFS), and higher fuel heat value (1015 Btu/scf) from the 1990 Base-Year Carbon Monoxide Emission Inventory. By using these parameters, the daily "bubble" SO₂ permit limit can be raised to 386 lb/day, as was indicated in the Preliminary Determination. Conoco requested the daily limit be increased to 612 lb/day, which is equivalent to the rate used in the Billings SO₂ State Implementation Plan (SIP) modeling (111.7 TPY). The annual "bubble" SO₂ limit of 30.0 TPY was maintained.

The Department received comments from Conoco, in which Conoco contends that the maximum heat input (MMBtu/hr) from the AFS does not accurately reflect the real maximum firing rates of the heaters. After further review of the files, the Department established the total maximum firing rate for the (19) Refinery Fuel Gas Heaters/Furnaces to be 785.5 MMBtu/hr. This total maximum firing rate was identified by Conoco during the permit review of the Coker permit (Permit #2619). The maximum heat input of 785.5 MMBtu/hr and the fuel heat of 958 Btu/scf are used to calculate a new daily "bubble" SO₂ permit limit of 529.17 lb/day.

The change in air emissions of other criteria pollutants (carbon monoxide (CO), nitrogen oxide (NO_x), particulate matter (PM), and VOC) associated with this project are zero, since the potentials to emit were not changed. With the current 164-lb/day SO₂ limit, simultaneous maximum firing of these heaters can be accomplished if the fuel gas H₂S content stays below 49.75 ppmv. Conoco's amine systems produce fuel gas averaging (on an annual basis) of about 25 ppmv H₂S content or less (see 1993 and 1994 Refinery EIS's). Since the emissions of CO, NO_x, and VOC produced are not a function of H₂S content, and Conoco's current amine system can generate appropriate fuel gas to stay at or below the 164 lb/day SO₂ limit, the maximum potentials of these pollutants are obtainable and were not affected by this project. The PM limits for these heaters are 80 times higher than the amount generated by fuel gas combustion devices (see ARM 17.8.340); therefore, the PM emissions potential was not affected as well.

Even though Conoco's past annual average fuel gas H₂S content was below 37.8 ppmv, there was still potential to run into operational limitations in peak fuel gas demand periods. The amine systems may not be able to keep the fuel gas H₂S under 49.75 ppmv, rendering the Refinery to operate at un-optimized rates. This was the reason for the request to raise the daily SO₂ emissions limit for the "19-Heater" source.

Since the proposed change to the heaters' SO₂ emissions limit does not reflect an annual increase in potential-to-emit, the project is not subject to PSD permitting review (threshold for SO₂ is 40 TPY).

In light of the SO₂ problem in the Billings-Laurel air shed, any change resulting in an increase of SO₂ emissions must have its impact determined to see if any National Ambient Air Quality Standards (NAAQS) will be violated as a result of the project. SO₂ modeling was completed by the Department to develop a revised SO₂ SIP for the Billings-Laurel area (see the Billings/Laurel SO₂ SIP Compliance Demonstration Report dated November 15, 1994). The "19-Heater source" was modeled using an SO₂ emission rate equivalent to 111.7 TPY to determine its SO₂ impact on the Billings-Laurel air shed. The results of this modeling showed there were no exceedances of the SO₂ NAAQS or the Montana standards resulting from its operation. Therefore, an increase in the permit limit from 164 lb/day to 612 lb/day of SO₂ did not result in any violations of SO₂ NAAQS or Montana standards; however, the daily emission limit set based on the NSPS limit of 0.1 grains/dscf (160 ppmv

H₂S) is more restrictive than the SIP limit. The daily emission limit, based on NSPS, is 529.17 lb/day for the existing 19 heaters/furnaces.

With the change of a daily SO₂ permit limit for the "19-Heater" source, Conoco also requested that the "19-Heater" source, the Coker heater (H-3901), and the GOHDS heaters (H-8401 and H-8401) be combined into one permitted source called the "Fuel-Gas-Heaters" source. Using the existing daily SO₂ permit limits for the Coker heater and GOHDS heaters, an overall SO₂ emissions limit "bubble" of 614 lb/day would apply to the "22-Fuel-Gas-Heaters" source. The annual limit for the "22-Fuel-Gas-Heaters" source has not changed and is 45.50 TPY (30.00 + 9.60 + 2.90 + 3.00).

On April 19, 1997, Conoco was issued Permit #2619-09 to "bubble" or combine the allowable hourly and annual NO_x emission limits for the Coker Heater, Recycle Hydrogen Heater, Fractionator Feed Heater, and Hydrogen Plant Heaters. The NO_x emission limits for these heaters were established on a pounds-per-million-Btu basis, and will be maintained.

By "bubbling" or combining the allowable hourly and annual NO_x emission limits for the Coker Heater, Recycle Hydrogen Heater, Fractionator Feed Heater, and Hydrogen Plant Heaters allows Conoco more operational flexibility with regard to heater firing rates and heater optimization. The Coker heater still has an hourly NO_x emission limit to prevent any significant impacts. This permit alteration does not allow an increase in the annual NO_x emissions. **Permit #2619-09** replaced Permit #2619-08.

On July 30, 1997, Permit #2619-10 was issued to Conoco in order to comply with 40 CFR 63, Subpart R, National Emission Standards for Gasoline Distribution Facilities. Conoco installed a gasoline vapor collection system and enclosed flare for the reduction of Hazardous Air Pollutants (HAPs) resulting from the loading of gasoline. The vapor combustion unit (VCU) was added to the bulk gasoline and distillate loading rack. The gasoline vapors were collected from the trucks during loading, then routed to an enclosed flare, where combustion occurs. The project results in overall reductions in the amount of actual emissions of VOCs (94.8 TPY), with a slight increase in CO (2.1 TPY) and NO_x (0.8 TPY) emissions. The actual reduction in potential emissions of VOCs is 899.5 TPY, while CO increases to 19.7 TPY and NO_x increases to 7.9 TPY emissions.

In addition, Conoco requested an administrative change be made to Section II.F.5, which brought the permit requirements in alignment with the monitoring requirements specified by 40 CFR 60, Subpart QQQ, and 40 CFR 61, Subpart FF.

Because Conoco's Bulk gasoline and distillate loading tank VCU is defined as an incinerator under MCA 75-2-215, a determination that the emissions from the VCU constitutes a negligible risk to public health is required prior to the issuance of a permit to the facility. Conoco and the Department identified the following hazardous air pollutants from the flare, which were used in the health risk assessment. These constituents are typical components of gasoline.

1. Benzene
2. Ethyl Benzene
3. Hexane
4. Methyl Tert Butyl Ether
5. Toluene
6. Xylenes

The reference concentrations for Ethyl Benzene, Hexane, and Methyl Tert Butyl Ether were obtained from EPA's IRIS database. The risk information for the remaining hazardous air pollutants is contained in the January 1992 CAPCOA Risk Assessment Guidelines. The model performed by Conoco for the hazardous air pollutants identified above demonstrate compliance with the negligible risk requirement. **Permit #2619-10** replaced Permit #2619-09.

On December 10, 1997, Conoco requested a modification to allow the continuous incineration of a PB Merox Unit off-gas stream in the firebox of Heater #16. Permit #2161-11 required the production of SO₂ from the sulfur containing compounds in the PB Merox Unit off-gas stream to be calculated and counted against the current SO₂ limitations applicable to the (22) Refinery Fuel Gas Heaters/Furnaces group. During a review of process piping and instrumentation diagrams, Conoco identified a PB Merox Unit off-gas stream incinerated in the firebox of Heater #16. A subsequent analysis of this off-gas stream revealed the presence of sulfur-containing compounds in low concentrations. The bulk of this low-pressure off-gas stream is nitrogen with some oxygen, hydrocarbons, and sulfur-containing compounds (disulfides, mercaptans). SO₂ produced from the continuous incineration of this stream has been calculated at approximately 1 ton per year. This off-gas stream is piped from the top of the disulfide separator through a small knock-out drum and directly into the firebox of Heater #16.

Conoco proposed to sample the PB Merox Unit disulfide separator gas stream on a monthly basis to determine the total sulfur (ppmw) present. This analysis, combined with the off-gas stream flow rate, is used to calculate the production of SO₂. After a year of sampling time and with the approval of the Department, Conoco may propose to reduce the sampling frequency of the PB Merox disulfide separator off-gas stream to once per quarter if the variability in the sulfur content is small (250 ppmw).

In addition, to be consistent with the wording as specified by 40 CFR 63, Subpart R, the Department replaced all references to "tank trucks" with "cargo tank" and all references to "truck loading rack" with "loading rack". Also, the first sentence in Section II.F.5 was deleted from the permit. Conoco had requested an administrative change be made to Section II.F.5, during the permitting action of #2619-10, which would bring the permit requirements in alignment with the monitoring requirements specified by 40 CFR 60, Subpart QQQ, and 40 CFR 61, Subpart FF. The Department approved the request and the correction was made, but the first sentence was inadvertently left in the permit. **Permit #2619-11** replaced Permit #2619-10.

On June 6, 2000, the Department issued Permit #2619-12 for replacement of the B-101 thermal reactor at the Jupiter Sulphur facility. The existing B-101 thermal reactor had come to the end of its useful life and had to be replaced. The replacement B-101 thermal reactor was physically located approximately 50 feet to the north of the existing thermal reactor, due to the excessive complications that would be encountered to dismantle the old equipment and construct the new equipment in the same space. Once the piping was rerouted to the new equipment the old equipment was incapable of use and will be demolished. Given this construction scenario, the Department determined that a permit condition limiting the operation to only one thermal reactor at a time was necessary. There was no increase in emissions due to this action. **Permit #2619-12** replaced Permit #2619-11.

Conoco submitted comments on the Preliminary Determination (PD) of Permit #2619-12. The following is the result of these comments:

In previously issued permits, Section II.A.4 listed storage tanks #4510 and #4511 as having external floating roofs with primary seal, which were liquid mounted stainless steel shoes and secondary seal equipped with a Teflon curtain or equivalent. Conoco stated that these two tanks were actually equipped with internal floating roofs with double-rim seals or a liquid-mounted seal system for VOC loss control.

Section II.A.7.g.ii always listed the CPI separators as primary separators, when in fact they are secondary.

The Department accepted the comments and made the changes, accordingly, in the Department decision version of the permit.

On March 1, 2001, the Department issued Permit #2619-13 for the installation and operation of 19 diesel-powered, temporary generators. These generators are necessary because of the high cost of electricity and supplement 18 MW of the refinery's electrical load, and 1 MW of Jupiter's electrical load. The generators are located south of the coke loading facility along with two new aboveground 20,000-gallon diesel storage tanks. The operation of the generators will not occur beyond 2 years and is not expected to last for an extended period of time, but rather only for the length of time necessary for Conoco to acquire a permanent, more economical supply of power.

Because these generators are only to be used when commercial power is too expensive to obtain, the amount of emissions expected during the actual operation of these generators is minor. In addition, the installation of these generators qualified as a "temporary source" under the PSD permitting program because the permit limited the operation of these generators to a time period of less than 2 years. Therefore, Conoco was not required to comply with ARM 17.8.804, 17.8.820, 17.8.822, and 17.8.824. Even though the portable generators were considered temporary, the Department required compliance with Best Available Control Technology (BACT) and public notice requirements; therefore, compliance with ARM 17.8.819 and 17.8.826 was ensured. In addition, Conoco is responsible for complying with all applicable ambient air quality standards. **Permit #2619-13** replaced Permit #2619-12.

On April 13, 2001, the Department issued Permit #2619-14 for the 1982 Saturate Gas Plant Project, submitted by Conoco as a retroactive permit application. During an independent compliance awareness review that was performed in 2000, Conoco discovered that the Saturate Gas Plant should have gone through the permitting process prior to it being constructed. At the time of construction, the project likely would have required a (PSD) of Air Quality permit. However, the current potential to emit for the project facility is well below the PSD VOC significance threshold. In addition, the Saturate Gas Plant currently participates in a federally-required leak detection and repair (LDAR) program, which would meet any BACT requirements, if PSD applied. The Department agreed that a permitting action in the form of a preconstruction permit application for the Saturate Gas Plant Project was necessary and sufficient to address the discrepancy. **Permit #2619-14** replaced Permit #2619-13.

On June 29, 2002, the Department issued Permit #2619-15 to clarify language regarding the Appendix F Quality Assurance requirements for the fuel gas H₂S measurement system and to include certain limits and standards associated with the Consent Decree lodged on December 20, 2001, respectively. In addition, the Department modified the permit to eliminate references to the now repealed odor rule (ARM 17.8.315), to correct the reference on conditions improperly referencing the incinerator rule (ARM 17.8.316),

and to eliminate the limits on the main boiler that were less stringent than the current limit established by the Consent Decree. **Permit #2619-15** replaced Permit #2619-14.

The Department received a request from Conoco on August 27, 2002, for the alteration of air quality Permit #2619-15 to incorporate the Low Sulfur Gasoline (LSG) Project into the refinery's equipment and operations. The LSG Project was being proposed to assist in complying with EPA's Tier 2 regulations. The project included the installation of a new storage vessel and minor modifications to the No. 2 hydrodesulfurization (HDS) unit, GOHDS unit, and hydrogen (H₂) unit in order to accommodate hydrotreating additional gasoline and gas oil streams that were currently not hydrotreated prior to being blended or processed in the FCC unit. The new storage vessel was designed to store offspec gasoline during occasions when the GOHDS unit was offline.

In addition, on August 28, 2002, Conoco requested to eliminate the footnote contained in Section II.B.1.b of Permit #2619-15 stating, "Emissions [of the SRU Flare] occur only during times that the ATS unit is not operating." Further, Conoco requested to change the SO₂ emission limitations of 25 pounds per hour (lb/hr) for each of the SRU Flare and SRU/ATS Main Stack to a 25-lb/hr limit on the combination of the SRU Flare and SRU/ATS Main Stack. Following discussion between Conoco and the Department regarding comments received within the Department and from EPA, Conoco requested an extension to delay issuance of the Department Decision to December 9, 2002. Following additional discussion, Conoco and the Department agreed to leave the footnote in the permit for the issuance of Permit #2619-16 and to revisit the issue at another time. **Permit #2619-16** replaced Permit #2619-15.

C. Current Permit Action

A letter from ConocoPhillips dated December 9, 2002, and received by the Department on December 10, 2002, notified the Department that Conoco had changed its name to ConocoPhillips. In a letter dated February 3, 2003, ConocoPhillips also requested the removal of the conditions regarding the temporary power generators because the permit terms for the temporary generators were "not to exceed 2 years" and the generators have been removed from the facility. The current permit action changes the name on this permit from Conoco to ConocoPhillips and removes permit terms regarding temporary generators. Permit #2619-17 has also been updated to reflect current permit language and rule references used by the Department. **Permit #2619-17** replaces Permit #2619-16.

D. Additional Information

Additional information, such as applicable rules and regulations, BACT/Reasonably Available Control Technology (RACT) determinations, air quality impacts and environmental assessments, is included in the analysis associated with each change to the permit.

II. Applicable Rules and Regulations

The following are partial explanations of some applicable rules and regulations that apply to the facility. The complete rules are stated in the ARM and are available, upon request, from the Department. Upon request, the Department will provide references for locations of complete copies of all applicable rules and regulations or copies where appropriate.

A. ARM 17.8, Subchapter 1, General Provisions, including, but not limited to:

1. ARM 17.8.101 Definitions. This rule includes a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.105 Testing Requirements. Any person or persons responsible for the emission of any air contaminant into the outdoor atmosphere shall, upon written request of the Department, provide the facilities and necessary equipment, including instruments and sensing devices, and shall conduct tests, emission or ambient, for such periods of time as may be necessary using methods approved by the Department. ConocoPhillips shall also comply with monitoring and testing requirements of this permit.
3. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by the Department, any source, or other entity as required by any rule in this chapter, or any permit or order issued pursuant to this chapter, or the provisions of the Montana Clean Air Act, 75-2-101, *et seq.*, Montana Code Annotated (MCA).

ConocoPhillips shall comply with all requirements contained in the Montana Source Test Protocol and Procedures Manual, including, but not limited to, using the proper test methods and supplying the required reports. A copy of the Montana Source Test Protocol and Procedures Manual is available from the Department upon request.

4. ARM 17.8.110 Malfunctions. (2) The Department must be notified promptly by telephone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation or to continue for a period greater than 4 hours.
5. ARM 17.8.111 Circumvention. (1) No person shall cause or permit the installation or use of any device or any means which, without resulting in reduction in the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant that would otherwise violate an air pollution control regulation. (2) No equipment that may produce emissions shall be operated or maintained in such a manner that a public nuisance is created.

B. ARM 17.8, Subchapter 2, Ambient Air Quality, including, but not limited to:

1. ARM 17.8.204 Ambient Air Monitoring
2. ARM 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide
3. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide
4. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide
5. ARM 17.8.213 Ambient Air Quality Standard for Ozone
6. ARM 17.8.214 Ambient Air Quality Standard for Hydrogen Sulfide
7. ARM 17.8.221 Ambient Air Quality Standard for Visibility
8. ARM 17.8.223 Ambient Air Quality Standard for PM₁₀

ConocoPhillips must comply with the applicable ambient air quality standards. See Section VI Ambient Air Impact Analysis.

C. ARM 17.8, Subchapter 3, Emission Standards, including, but not limited to:

1. ARM 17.8.304 Visible Air Contaminants. This rule requires that no person may cause or authorize emissions to be discharged to an outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes.

2. ARM 17.8.308 Particulate Matter, Airborne. (1) This rule requires an opacity limitation of 20% for all fugitive emission sources and that reasonable precautions be taken to control emissions of airborne particulate matter. (2) Under this rule, ConocoPhillips shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.
3. ARM 17.8.316 Incinerators. This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any incinerator, particulate matter in excess of 0.10 grains per standard cubic foot of dry flue gas, adjusted to 12% carbon dioxide and calculated as if no auxiliary fuel had been used. Also, no person shall cause or authorize to be discharged into the outdoor atmosphere from any incinerator emissions that exhibit an opacity of 10% or greater averaged over 6 consecutive minutes.
4. ARM 17.8.340 Standard of Performance for New Stationary Sources. This rule incorporates, by reference, 40 CFR 60, NSPS. ConocoPhillips is considered an NSPS affected facility under 40 CFR 60 and is subject to NSPS Subparts including, but not limited to:
 - a. Subpart A, General Provisions, applies to all equipment or facilities subject to an NSPS Subpart as listed below.
 - b. Subpart J, Standards of Performance for Petroleum Refineries, shall apply to all of the heaters and boilers (with the exception of H-16, the heater that combusts the P-B Merox vent line, until June 30, 2003, when it will become subject) at the ConocoPhillips refinery, the Claus units at the Jupiter sulfur recovery facility, and any other applicable equipment.
 - c. Subpart Ka, Standards of Performance for Volatile Organic Liquid Storage Vessels, shall apply to all volatile organic storage vessels (including petroleum liquid storage vessels) for which construction, reconstruction or modification commenced after May 18, 1978, and prior to July 23, 1984. These requirements shall be as specified in 40 CFR 60.110a through 60.115a. The affected tanks include, but are not limited to:

<u>Tank Number</u>	<u>Contents</u>
#100-Ka*	Asphalt
#101-Ka*	Asphalt
#102-Ka	Gasoline
#104-Ka*	Vacuum Resid

* Currently exempt from all emission control provisions due to vapor pressure of materials stored.

- d. Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels, shall apply to all volatile organic storage vessels (including petroleum liquid storage vessels) for which construction, reconstruction or modification commenced after July 23, 1984. These requirements shall be as specified in 40 CFR Part 60.110b through 60.117b. The affected tanks include, but are not limited to, the following:

<u>Tank Number</u>	<u>Contents</u>
#36-Kb	Slop oil

#72-Kb	Gasoline
#107-Kb*	Residue
#110-Kb*	Diesel
#162-Kb*	Groundwater HC recovery
#T-3201*	Polymer Modified Asphalt (PMA)
#T-4524	LSG Tank (Off-spec gasoline tank)

* Currently exempt from all emission control provisions due to vapor pressure of materials stored.

- e. Subpart UU, Standards of Performance for Asphalt Processing and Asphalt Roofing Manufacture, shall apply to, but not be limited to, asphalt storage tank T-3201, and any other applicable storage tanks that commenced construction or modification after May 26, 1981. Asphalt storage tank T-3201 shall comply with the standards in 40 CFR 60.472(c), and 0% opacity, except for one consecutive 15-minute period in any 24-hour period when transfer lines are being blown for clearing. The PMA unit will be operating at 400°F, well under the asphalt's smoking temperature of 450°F; therefore, the tank vent opacity will always have 0% opacity. There are no record-keeping requirements under this subpart. However, any malfunction must be reported as required under ARM 17.8.110, Malfunctions.
 - f. Subpart GGG, Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries, shall apply to, but not be limited to, the delayed coker unit, cryogenic unit, hydrogen membrane unit, gasoline mercox unit, crude vacuum unit, gas oil hydrotreater unit (consisting of a reaction section, fractionation section, and an amine treating section), 20.0-MMscfd hydrogen plant feed system, Alkylation Unit Butane Defluorinator Project (consisting of heat exchangers X-453, X-223, X-450, X-451, X-452; pump P-646; and vessels D-130, D-359, D-360), PMA process unit, Alkylation Unit Depropanizer Project, and any other applicable equipment constructed or modified after January 4, 1983.
 - g. Subpart QQQ - Standards of Performance for VOC Emissions from Petroleum Refining Wastewater Systems shall apply to, but not be limited to, the coker unit drain system, desalter wastewater break tanks, CPI separators, gas oil hydrotreater, 20.0-MMscfd hydrogen plant, C-23 compressor station, Alkylation Unit Butane Defluorinator Project, Alkylation Unit Depropanizer Project, and any other applicable equipment.
 - h. All other applicable subparts and referenced test methods.
5. ARM 17.8.341 Standards of Performance for Hazardous Air Pollutants.
ConocoPhillips shall comply with the standards and provisions of 40 CFR Part 61, as listed below:
- a. Subpart A - General Provisions applies to all equipment or facilities subject to a NESHAP Subpart as listed below.
 - b. Subpart FF - National Emission Standards for Benzene Waste Operations shall apply to, but not be limited to, all new or recommissioned wastewater

sewer drains associated with the Alkylation Unit Depropanizer Project, the refinery's existing sewer system (including maintenance and water draw down activities of the LSG tank involving liquids that may include small concentrations of benzene), and Tanks 34 and 35.

6. ARM 17.8.342 Emission Standards for Hazardous Air Pollutants for Source Categories. The source, as defined and applied in 40 CFR Part 63, shall comply with the requirements of 40 CFR Part 63, as listed below:
 - a. Subpart A, General Provisions, applies to all NESHAP source categories subject to a Subpart as listed below.
 - b. Subpart R, National Emission Standards for Gasoline Distribution Facilities, shall apply to, but not limited to, the Bulk Loading Rack.
 - c. Subpart CC, National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries.
- D. ARM 17.8, Subchapter 4, Stack Height and Dispersion Techniques, including, but not limited to:

ARM 17.8.401 Definitions and ARM 17.8.402 Requirements. ConocoPhillips must demonstrate compliance with the ambient air quality standards, based on the use of Good Engineering Practices (GEP) stack height.
- E. ARM 17.8, Subchapter 5, Air Quality Permit Application, Operation and Open Burning Fees, including, but not limited to:
 1. ARM 17.8.504 Air Quality Permit Application Fees. This rule requires that an applicant submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the Department. A permit application was not required for the current permit action because there is no increase in emissions and the action is considered an administrative action.
 2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit, excluding an open burning permit, issued by the Department. The air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

The annual assessment and collection of the air quality operation fee, described above, shall take place on a calendar-year basis. The Department may insert into any final permit issued after the effective date of these rules, such conditions as may be necessary to require the payment of an air quality operation fee on a calendar-year basis, including provisions that prorate the required fee amount.
- F. ARM 17.8, Subchapter 7, Permit, Construction and Operation of Air Contaminant Sources, including, but not limited to:
 1. ARM 17.8.740 Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.
 2. ARM 17.8.743 Montana Air Quality Permits--When Required. This rule

requires a facility to obtain an air quality permit or permit alteration if they construct, alter or use any air contaminant sources that have the potential to emit greater than 25 tons per year of any pollutant. ConocoPhillips has the potential to emit more than 25 tons per year of particulate matter, PM₁₀, NO_x, CO, VOC, and SO₂; therefore, an air quality permit is required.

3. ARM 17.8.744 Montana Air Quality Permits--General Exclusions. This rule identifies the activities that are not subject to the Montana Air Quality Permit program.
4. ARM 17.8.745 Montana Air Quality Permits—Exclusion for De Minimis Changes. This rule identifies the de minimis changes at permitted facilities that are not subject to the Montana Air Quality Permit Program.
5. ARM 17.8.748 New or Modified Emitting Units--Permit Application Requirements. This rule requires that a permit application be submitted prior to installation, alteration or use of a source. ConocoPhillips was not required to submit an application for the current permit action because it is considered administrative.
6. ARM 17.8.749 Conditions for Issuance or Denial of Permit. This rule requires that the permits issued by the Department must authorize the construction and operation of the facility or emitting unit subject to the conditions in the permit and the requirements of this subchapter. This rule also requires that the permit must contain any conditions necessary to assure compliance with the Federal Clean Air Act (FCAA), the Clean Air Act of Montana, and rules adopted under those acts.
7. ARM 17.8.752 Emission Control Requirements. This rule requires a source to install the maximum air pollution control capability that is technically practicable and economically feasible, except that BACT shall be utilized. A BACT determination was not required for the current permit action because there are no new or altered sources permitted as a part of this action.
8. ARM 17.8.755 Inspection of Permit. This rule requires that air quality permits shall be made available for inspection by the Department at the location of the source.
9. ARM 17.8.756 Compliance with Other Requirements. This rule states that nothing in the permit shall be construed as relieving ConocoPhillips of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq.*
10. ARM 17.8.759 Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those permit applications that do not require the preparation of an environmental impact statement.
11. ARM 17.8.762 Duration of Permit. An air quality permit shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or altered source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.

12. ARM 17.8.763 Revocation of Permit. An air quality permit may be revoked upon written request of the permittee, or for violations of any requirement of the Clean Air Act of Montana, rules adopted under the Clean Air Act of Montana, the FCAA, rules adopted under the FCAA, or any applicable requirement contained in the Montana State Implementation Plan (SIP).
13. ARM 17.8.764 Administrative Amendment to Permit. An air quality permit may be amended for changes in any applicable rules and standards adopted by the Board of Environmental Review (Board) or changed conditions of operation at a source or stack that do not result in an increase of emissions as a result of those changed conditions. A source may not increase its emissions beyond those found in its permit unless the source applies for and receives another permit.
14. ARM 17.8.765 Transfer of Permit. This rule states that an air quality permit may be transferred from one person to another if written notice of Intent to Transfer, including the names of the transferor and the transferee, is sent to the Department.
15. ARM 17.8.770 Additional Requirements for Incinerators. This rule specifies the additional information that must be submitted to the Department for incineration facilities subject to 75-2-215, MCA.

G. ARM 17.8, Subchapter 8, Prevention of Significant Deterioration of Air Quality, including, but not limited to:

1. ARM 17.8.801 Definitions. This rule is a list of applicable definitions used in this subchapter.
2. ARM 17.8.818 Review of Major Stationary Sources and Major Modifications -- Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through ARM 17.8.827 shall apply to any major stationary source and any major modification with respect to each pollutant subject to regulation under the FCAA that it would emit, except as this subchapter would otherwise allow.

ConocoPhillips' existing petroleum refinery in Billings is defined as a "major stationary source" because it is a listed source with the potential to emit (PTE) more than 100 tons per year of several pollutants (SO₂, CO, and VOCs). ConocoPhillips' proposed modification is not defined as a "major modification" because the action is considered an administrative action.

H. ARM 17.8, Subchapter 12, Operating Permit Program Applicability, including, but not limited to:

1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the FCAA is defined as any stationary source having:
 - a. PTE > 100 tons/year of any pollutant;
 - b. PTE > 10 tons/year of any one Hazardous Air Pollutant (HAP), PTE > 25 tons/year of a combination of all HAPs, or a lesser quantity as the Department may establish by rule; or
 - c. Sources with the PTE > 70 tons/year of PM₁₀ in a serious PM₁₀

nonattainment area.

2. ARM 17.8.1204 Air Quality Operating Permit Program Applicability. (1) Title V of the FCAA Amendments of 1990 requires that all sources, as defined in ARM 17.8.1204 (1), obtain a Title V Operating Permit. In reviewing and issuing Air Quality Permit #2619-17 for ConocoPhillips, the following conclusions were made:
 - a. The facility's PTE is greater than 100 tons/year for several pollutants.
 - b. The facility's PTE is greater than 10 tons/year for any one HAP and greater than 25 tons/year of all HAPs.
 - c. This source is not located in a serious PM₁₀ nonattainment area.
 - d. This facility is subject to NSPS requirements.
 - e. This facility is subject to current NESHAP standards.
 - f. This source is not a Title IV affected source, nor a solid waste combustion unit.
 - g. This source is not an EPA designated Title V source.

Based on these facts, the Department determined that ConocoPhillips is a major source of emissions as defined under Title V. ConocoPhillips submitted a Title V Operating Permit application on June 12, 1996, and the Title V Permit #OP2619-00 was issued Final on July 9, 2002.

III. BACT Determination

A BACT determination is required for each new or altered source. ConocoPhillips shall install on the new or altered source the maximum air pollution control capability, which is technically practicable and economically feasible, except that BACT shall be utilized. Because this permit action was administrative and did not involve a new or altered source, a BACT analysis was not required.

IV. Emission Inventory

No new emission sources are being permitted under Permit #2619-17. A complete emission inventory is on file with the Department and is available upon request. Any emission inventories completed for previous versions of the permit are contained in the analysis of the respective permit.

V. Existing Air Quality

ConocoPhillips is located at 401 South 23rd Street in Billings, Montana in the NW¼ of Section 2, Township 1 South, Range 26 East, in Yellowstone County. This area is considered attainment for all criteria pollutants. The Billings CO "not classified" nonattainment area, which included the ConocoPhillips, was reclassified to attainment by EPA's direct final rulemaking on April 22, 2002. The Laurel SO₂ nonattainment area is nearby. This permit action does not increase emissions from the facility, and the impacts to existing air quality will be unchanged.

VI. Ambient Air Impact Analysis

The Department did not conduct ambient air modeling, for this permit action. The Department believes the current permit action will not cause or contribute to a violation of any ambient air quality standard because the permit action is considered administrative.

VII. Taking or Damaging Implication Analysis

As required by 2-10-101 through 105, MCA, the Department conducted a private property taking and damaging assessment and determined there are no taking or damaging implications.

VIII. Environmental Assessment

This permitting action will not result in an increase of emissions from the facility and is considered an administrative action; therefore, an Environmental Assessment is not required.

Permit Analysis Prepared By: Chris Ames

Date: February 18, 2003